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M. Cobb
12/18/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Fields, Brian

Serial No.:	**09/857,145**	Group Art Unit:	**3727**
Filed:	**May 31, 2001**	Examiner:	**Mai, Tri M.**

For: **SMALL DIAMETER CAN END WITH LARGE OPENING**

Assistant Commissioner for Patents
Washington, D.C. 20231

DECLARATION OF MR. BRIAN FIELDS

I, Mr. Brian Fields, make the following declaration:

1. I, Brian Fields, am the inventor of the subject matter disclosed and claimed in United States Patent Application No. 09/857,145 ("Patent Application"). I understand that the pending claims of the Patent Application have been rejected by the patent office based on a combination of references.

2. I am employed by Crown Technologies Corporation, where my present capacity is End Development Manager. I have a bachelors degree in Mechanical Engineering from Loughborough University, U.K., and have been involved in engineering and development in the field of metal containers for 23 years.

3. The Patent Application teaches and claims an easy opening can end including, among other things, a circular center panel having a diameter less than 1.835 inches and an opening that has both an open area of less than 0.5 in^2 and an aspect ratio of between 1.3 and 1.7.

4. In an effort to improve the pouring properties of ends having a small center panel (that is, less than 1.835 inches), I discovered that an opening could provide improved pour characteristics when provided with an aspect ratio in a particular range, even though the opening was small in total area. That aspect ratio range is reflected in the pending claims of my Patent Application.

5. Prior to the time of my invention and discovery described in my Patent Application, typical, conventional thinking among engineers and designers working in the field of metal can end development was that an aspect ratio close to 1.0 (that is, a geometric shape approaching a circle) provided the best combination of open area and generally good flow parameters. Further, an aspect ratio greater than 1.1, which forms a slot-shape, was generally considered to be not preferred because of the inherent difficulties in drinking from a slot-shape opening – including the fact that the pursed lips of some drinkers may not be wide enough to fully cover the slot, which could result in dribbling. Thus, the conventional thinking led away from an aspect ratio greater than 1.0 or 1.1.

6. I performed the testing that is represented in Exhibits 1 and 2 of the response to the Office Action submitted herewith. The testing demonstrates the unexpected flow characteristics of the opening described in my Patent Application by comparing the flow characteristics of conventional end C to those of my end, -- embodiment end D – having an aspect ratio falling within the range recited in my pending claim 1 but having an opening area equal to that of end C.

7. The opening described in my Patent Application provides fewer flow rate fluctuations than conventional aspect ratios for openings smaller than 0.5 in^2. In other words, the "glugging" phenomenon, which consumers consider unappealing, is reduced from the conventional end identified in Figure 3 of my Patent Application as end C.

8. The opening described in my Patent Application not only provides a higher peak flow rate than conventional end C, but also reaches the peak flow rate significantly faster than does end C. The flow characteristic upon initially rotating the containers (as described on page 2, line 22, et. seq.), generally referred to as "inrush," is another important parameter. The flow rate of my end D stops monotonically increasing only at time increment 6 while conventional end C stops monotonically increasing at time increment 3. My end D delays detrimental glugging approximately for a period approximately twice as long as that for conventional end C. Further, my end D begins glugging at approximately the same time increment as conventional end A even though the opening of conventional end A is 32% larger than the opening of my end D (that is, 0.596 in^2 compared with 0.450 in^2).

9. The first local peak flow rate for my end D (measured at time increment 5) is 9.79 g/unit time, which is nearly double the first local peak flow rate of conventional end C, 4.92 g/unit time (measured at only time increment 2). The flow rate at the first local peak of my end D is even approximately 50 % larger than the second peak of conventional end C: 9.79 g/unit time compared with 6.53 g/unit time (both measured at time increment 5).

10. The total time required for emptying a container employing the opening described in my Patent Application is significantly shorter than for conventional end C. My end D emptied in 40 time increments, compared with 50 time increments for conventional end C having the same opening area.

11. The pouring characteristics of the opening described in my Patent Application even approach those of the larger, conventional end designated in Figure 3 of the Patent Application as end A, even though the opening of end A is approximately 22% larger than the opening of my end B (that is, 0.596 in^2 compared with 0.487 in^2) and 32% larger than the opening of my end D (that is, 0.596 in^2 compared with 0.450 in^2).

12. The similarity of the plots of ends B and D in Exhibit 1 (that is, two embodiments of ends falling within my claimed aspect ratio range) demonstrate the advantages of the claimed range, as end B has an aspect ratio of 1.51 and end D has an aspect ratio of 1.61.

13. All statements of my own knowledge true and correct, or are based on information that I believe to be true and correct. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both, and may jeopardize the validity of the application or any patent issuing thereon.

Executed on 9 December 2002.

Brian Fields